

(12) INTERNATIONAL APPLICATION PUBLISHED ACCORDING TO THE TREATY ON
INTERNATIONAL COOPERATION IN THE AREA OF PATENTS AND INTELLECTUAL
PROPERTY (PCT)

(19) World organization for intellectual property – International office

(43) International date of publication – 21 October 1999 (21.10.1999)

(11) International publication number **WO 99/52761**

(51) International patent classification⁶:

**B62D 1/04, B60R 16/00, 16/02, B60K
37/06**

(21) International file number: PCT/EP99/02359

(22) International date of filing:

7 April 1999 (07.04.1999)

(30) Priority dates:

298 06 461.8 8 April 1998 (08.04.1998) DE

(71) (72) Applicant and inventor:

Bock, Walter [DE/DE]; Hellersbergweg 4,
D-65599 Dornburg (DE).

(74) Attorney: Mueller, Eckhard; Eifelstrasse 14,
D-65597 Huenfelden-Dauborn (DE).

DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
NL, PT, SE).

Published

*with international search report
prior to the expiration of the allowed
deadline for changes to the claims;
publication will be repeated in the case that
changes are made.*

(81) Contracting states: BR, CZ, JP, US,

European patent (AT, BE, CH, CY, DE,

(54) Title: MOTOR VEHICLE STEERING WHEEL WITH CONTROL ELEMENTS

(57) Abstract

The invention relates to a steering wheel for motor vehicles, especially automobiles, fitted with control elements for actuating accessory devices in said vehicle. In order to actuate a plurality of motor vehicle accessory devices from the steering wheel, a multifunctional control panel (1) is provided in the impact absorber (3).

Title: Steering wheel with control elements for motor vehicles

Description

The invention relates to a steering wheel for motor vehicles, especially for automobiles, fitted with control elements for actuating accessory devices in said vehicle.

These type of steering wheels fitted with control elements are already employed in motor vehicles made by the Bayerischer Motorenwerke AG (BMW), Munich. With the control elements one can actuate accessory devices in the vehicle interior, for example telephone devices, radio equipment and similar items.

The control elements are placed on the sides of the steering wheel in order to avoid hindering the functioning of the airbag that is stored within the impact absorber part of the steering wheel. The control elements are designed as typical switches. Due to the airbag function of the steering wheel the number of these switch elements is limited.

Starting from here the objective of the invention is to disclose a steering wheel of the type mentioned at the beginning, from said steering wheel a multitude of accessory devices on the motor vehicle can be actuated.

According to the invention this objective is essentially solved for the steering wheel of the type mentioned at the beginning in that a multifunctional control panel is placed in the area of the impact absorber of the steering wheel.

Through the invention a steering wheel is realized that makes an easy actuation of nearly all the accessory devices in the motor vehicle possible, such as for example signal apparatus with horn, blinkers, brake light, headlights, fog lights or windshield wipers, blowers for heating, interior lighting, air conditioning, electrical window lifter, electrical parking brake, electrical seat adjustment, indicator for gasoline level, temperature indicator, telephone devices, cruise control, fax machine, automatic shifting, radio, navigation apparatus and warning or hazard lights. The driver can actuate these accessory devices, especially turn them on, without having to take their hands off of the steering wheel. Through this here the driver's attention remains continually focused on the traffic while driving. Furthermore, through this invention all of the switches that were previously in the interior of the vehicle for actuating accessory devices can fundamentally be removed.

According to a first advantageous embodiment of the invention the multifunctional control panel has a rated breaking point for the functioning of the airbag. Through this here an arrangement of the multifunctional control panel is achieved on the impact absorber of the steering wheel without having the airbag be hindered by the control panel in case the airbag would be activated.

An alternative embodiment of the invention exists in that the multifunctional control panel is arranged on the impact absorber of the steering wheel such that said control panel can fold away, or correspondingly, swing away or something similar in the case that the airbag is activated.

For increasing the control security and control comfort, the multifunctional control panel has control elements that are responsible for a particular function and control elements that are responsible for a multiplicity of functions. The most important accessory devices of the vehicle are activated with the control elements that have one particular function, such as blinkers, light, high-beam headlights, horn, windshield wiper, fog lights and hazard blinker, where then a targeted and immediate operation of these signals and safety devices is insured. All the other accessory devices are operated by the control elements that have multiple functions. For this it is provided, according to the invention, that at least one control element is designed for selecting different accessory devices. For these control elements so-called scroll-control elements can be provided, where then a clear arrangement of the control elements on the multifunctional control panel is also achieved.

Furthermore, it is provided according to the invention that at least one control element is designed for determining the parameters of the selected accessory device. The respective function of such a control element is established by the selection of the accessory device. For example, if the radio were selected, then at least the function of radio station selection, volume, speaker, bass treble adjustment would be dedicated to a part of this control element.

An advantageous embodiment of the invention exists in that the multifunctional control panel has a unit for entering data. Through this here it makes it possible that control commands can be entered in the form of text, for example for a navigation system, for telephone unit or similar systems that need a text or number entry in order to be operated.

According to another advantageous feature of the invention, the multifunctional control panel has interface places. Through this here it is possible to connect other accessory devices to the multifunctional control panel. Especially, an internet connection can take place through this here and telemetry devices can also be connected.

An advantageous embodiment of the invention exists in that the multifunctional control panel is connected with a computer. The computer serves for controlling the functions of the multifunctional control panel and takes over coordination of the data exchange between the multifunctional control panel and connected accessory devices or other peripheral devices of the motor vehicle. Through this here, information exchange can also occur with a traffic information system and traffic control system in order to convey to the driver the present traffic signs on the roads, especially speed limits, no-passing zones or also reports about traffic jams.

An alternative embodiment of the invention exists in that the multifunctional control panel has a microcomputer unit.

An indicator of the operating information of the accessory devices and peripheral devices that are connected to the multifunctional control panel is insured in an inventive manner in that the multifunctional control panel controls at least one display.

It is especially advantageous if the multifunctional control panel is designed as a touch-screen, or correspondingly, as a touch-sensitive screen. Through this here a simple operation and change in the order of the individual control elements within the screen segments is possible.

Other objectives, advantages, features and application possibilities of the present invention result from the following description of an example with the aid of the drawing. Here, all described and/or graphically represented features form by themselves or in any sensible combination the article of the present invention, also independent from its summary in the claims or their back reference.

The only figure shows a steering wheel 4 of a motor vehicle, a multifunctional control panel 1 is arranged upon the impact absorber 3 of the steering wheel. The multifunctional control panel 1 serves for actuating nearly all of the accessory devices of the motor vehicle, such as for example signal apparatus with horn, blinkers, head-lights, warning lights, fog lights or also windshield wipers, blowers for heating, lighting, air conditioning, electrical window lifter, electrical parking brake, electrical seat adjustment, indicator for gasoline level, temperature indicator, telephone devices, fax machine, cruise control, automatic shifting, radio or navigation apparatus. Through this here, the driver of the vehicle can operate nearly all of the accessory devices in the motor vehicle without having to take their hands off of the steering wheel 4 during the drive.

For the embodiment represented here the multifunctional control panel 1 has a rated breaking point 5 that is aligned with the one for the airbag on the impact absorber 3 of the steering wheel 4. Through this here a restriction in the functioning of the airbag is avoided.

As an alternative to this embodiment, the multifunctional control panel 1 could be arranged on the impact absorber 3 of the steering wheel 4 such that it could also fold away and/or swing away in case the airbag is set off.

Control elements 14, 15, 16 and 17 of the multifunctional control panel 1 serve for activating the individual accessory devices on the motor vehicle. For the represented embodiment the control elements 14 and 17 are designed as switches for a particular function, and correspondingly, with a single function. With the control panel 14, the most important accessory devices and the accessory devices with the most relevant safety controls, such as blinkers, high-beam headlights, low-beam headlights, windshield wiper, horn, fog lights and hazards, can be directly activated. The control elements, 17 are provided as reserve-switches and thus other accessory devices, such as automatic transmission, electrical parking brake, cruise control, electrical window lifter or also radio device, telephone, fax machine and navigation apparatus, can be directly chosen.

In the embodiment chosen here, the control elements 15 are designed as so-called scroll-control elements with which one can select all of the accessory devices that are not captured by the control elements 14.

To increase the control comfort the scroll-control element 15, designated in the Figure with "Up (Auf)" serves for selecting the accessory devices in increasing order, and correspondingly the scroll-control element 15 designated with "Down (Ab)" serves for selecting in decreasing order.

With the selection of a certain accessory device the necessary functions for controlling and determining the parameters of the corresponding accessory device are dedicated to the other control elements 16, which are designed

as capacitive control films. For example, as is shown in the Figure, when the radio device is selected the functions of radio station, volume, speakers, bass and treble settings are dedicated to the other control elements 16.

Obviously, one can also place control elements 14 with one particular function on the multifunctional control element 1, this can be realized especially through the use of capacitive control films, such as through touch screens.

For the represented embodiment the multifunctional control panel 1 has a keyboard 7 as the information entering unit as is already known from microcomputers. This keyboard 7 serves for entering text information, for example for the operation of the navigation system, the telephone or for the operation of similar systems that necessitate text, or correspondingly, numbers for their operation. For using the telephone a microphone 9 is additionally provided, in this embodiment said microphone is integrated into the multifunctional control panel 1.

The multifunctional control panel 1 operates at least one display 10 for the visual representation of the operating information or the operational state of the chosen accessory device and optionally of the motor vehicle. Said display is placed in the viewing field of the driver, preferably in the instrument panel 11 of the vehicle; here the speed indicator is designated with the reference number 12 and tachometer is designated with the reference number 13.

For the represented embodiment a microprocessor unit (not shown) is connected with the multifunctional control panel 1. This microprocessor unit operates the functions of the multifunctional control panel 1 and takes over the coordination of the information exchange between the multifunctional control panel 1 and the connected accessory devices, just as optionally connected peripheral devices, such as for example the keyboard 7, microphone 9 or the display 10. Through this here, information exchange is also possible with a traffic information system and traffic control system in order to convey to the driver the present traffic signs on the roads, especially speed limits, no-passing zones or also reports about traffic jams and represents them on the display 10.

Interface connections (not shown) are provided for connecting the accessory devices and the peripheral devices to the multifunctional control panel 1, where then expansion possibilities are also created. For example, news can be received through the internet connection and by the telemetry devices and can be shown on the display 10.

Through the invention a steering wheel 4 is created that allows for a simple actuation of nearly all of the accessory devices of the motor vehicle. The control elements 14, 15, 16, 17 can be economically produced and can be placed in the steering wheel 4 without having the functioning of the airbag be affected. Through this here practically all of the switches, known up to now, in the interior of the motor vehicle for operating accessory devices in the vehicle can be done away with.

Reference number list:

- 1 – multifunctional control panel
- 3 – impact absorber
- 4 – steering wheel
- 5 – rated breaking point
- 7 – keyboard
- 9 – microphone
- 10 – display
- 11 – instrument panel
- 12 – speed indicator
- 13 – tachometer
- 14 – control element
- 15 – scroll-control element
- 16 – control element
- 17 – control element

Patent Claims

1. Steering wheel for vehicles, especially motor vehicles with control elements for actuating accessory devices on the motor vehicle is characterized in that a multifunctional control panel (1) is placed in the area of the impact absorber (3) of the steering wheel (4).
2. Steering wheel according to claim 1 is characterized in that the multifunctional control panel (1) has a rated breaking point (5) for the functioning of the airbag.

3. Steering wheel according to claim 1 or 2 is characterized in that the multifunctional control panel (1) is arranged on the impact absorber (3) of the steering wheel (4) such that in the case of the airbag being activated the control panel can fold away, or correspondingly, swing away or something similar.
4. Steering wheel according to one of the claims 1 to 3 is characterized in that the multifunctional control panel (1) has control elements (14, 15, 16) with one particular function and control elements with several functions.
5. Steering wheel according to one of the previous claims is characterized in that at least one control element (15) is designed for selection of different accessory devices.
6. Steering wheel according to one of the previous claims is characterized in that at least one control element (16) is designed for determining parameters of the selected accessory device.
7. Steering wheel according to one of the claims 1 to 6 is characterized in that the multifunctional control panel (1) has a unit for entering information.
8. Steering wheel according to one of the claims 1 to 7 is characterized in that the multifunctional control panel (1) has interface ports.
9. Steering wheel according to one of the claims 1 to 8 is characterized in that the multifunctional control panel (1) is connected to a microprocessor unit.
10. Steering wheel according to one of the previous claims is characterized in that the multifunctional control panel has a microcomputer unit.
11. Steering wheel according to one of the previous claims is characterized in that the multifunctional control panel (1) operates at least one display (10).
12. Steering wheel according to one of the previous claims is characterized in that the multifunctional control panel (1) is designed as a touch-screen (touch sensitive screen).

